

## 5.5 Diagnostische toets

### Opgave 1:

- a.  $5x^6 = 30$   
 $x^6 = 6$   
 $x = \sqrt[6]{6} \quad \vee \quad x = -\sqrt[6]{6}$
- b.  $6x^5 + 17 = -51$   
 $6x^5 = -68$   
 $x^5 = -11\frac{1}{3}$   
 $x = \sqrt[5]{-11\frac{1}{3}}$
- c.  $3x^4 - 8 = 40$   
 $3x^4 = 48$   
 $x^4 = 16$   
 $x = 2 \quad \vee \quad x = -2$
- d.  $3x^4 + 8 = 20$   
 $3x^4 = 12$   
 $x^4 = 4$   
 $x = \sqrt[4]{4} \quad \vee \quad x = -\sqrt[4]{4}$

### Opgave 2:

- a.  $0,1x^3 = 18$   
 $x^3 = 180$   
 $x = \sqrt[3]{180} = 5,65$
- b.  $7x^4 - 5 = -19$   
 $7x^4 = -14$   
 $x^4 = -2$   
geen oplossingen
- c.  $11x^6 - 91 = 68$   
 $11x^6 = 159$   
 $x^6 = 14,45$   
 $x = 1,56 \quad \vee \quad x = -1,56$
- d.  $11x^5 + 9 = -8$   
 $11x^5 = -17$   
 $x^5 = -1,55$   
 $x = -1,09$

### Opgave 3:

- a.  $G = 13,4 \cdot 1,73^3 = 69 \text{ kg}$
- b.  $13,4 \cdot l^3 = 32$   
 $l^3 = 2,39$   
 $l = 1,34 \text{ m}$

**Opgave 4:**

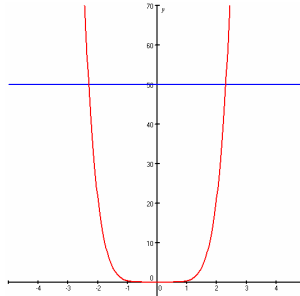
- a.  $7 - 3 \cdot \sqrt[5]{x} = 1$   
 $-3 \cdot \sqrt[5]{x} = -6$   
 $\sqrt[5]{x} = 2$   
 $x = 2^5 = 32$
- b.  $5 \cdot \sqrt[4]{x} + 2 = 27$   
 $5 \cdot \sqrt[4]{x} = 25$   
 $\sqrt[4]{x} = 5$   
 $x = 5^4 = 625$

**Opgave 5:**

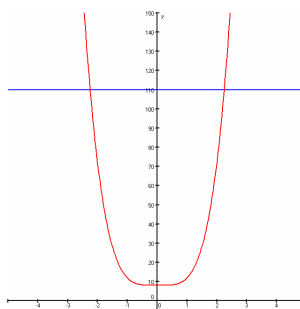
- a.  $y = 0,2x^5 - 8$   
 $y + 8 = 0,2x^5$   
 $5y + 40 = x^5$   
 $x = \sqrt[5]{5y + 40}$
- b.  $y = 5 \cdot \sqrt[3]{x} - 3$   
 $y + 3 = 5 \cdot \sqrt[3]{x}$   
 $\frac{1}{5}y + \frac{3}{5} = \sqrt[3]{x}$   
 $x = (\frac{1}{5}y + \frac{3}{5})^3$

**Opgave 6:**

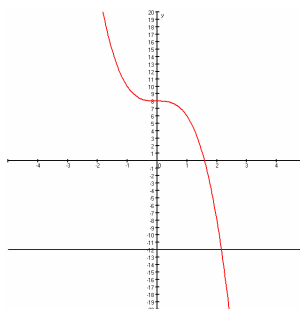
- a.  $\frac{1}{3}x^6 > 50$   
 $x^6 = 150$   
 $x = 2,31 \vee x = -2,31$   
 $x < -2,31 \vee x > 2,31$



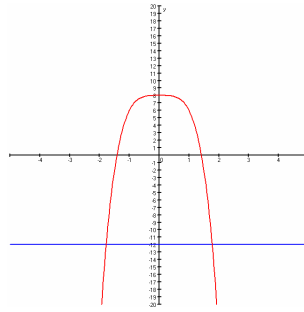
- b.  $4x^4 + 8 \leq 110$   
 $4x^4 = 102$   
 $x^4 = 25,5$   
 $x = 2,25 \vee x = -2,25$   
 $-2,25 \leq x \leq 2,25$



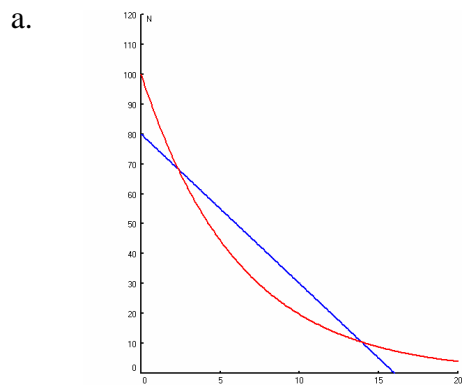
- c.  $-2x^3 + 8 \geq -12$   
 $-2x^3 = -20$   
 $x^3 = 10$   
 $x = 2,15$   
 $x \leq 2,15$



- d.  $-2x^4 + 8 \leq -12$   
 $-2x^4 = -20$   
 $x^4 = 10$   
 $x = 1,78 \quad \vee \quad x = -1,78$   
 $x \leq -1,78 \quad \vee \quad x \geq 1,78$



### Opgave 7:



- b.  $y_1 = 100 \cdot 0,85^x$  met tabel:  $x = 19$  dus vanaf  $t = 19$   
c.  $y_1 = 100 \cdot 0,85^x$  en  $y_2 = 80 - 5x$   
intersect geeft:  $t = 2,35 \quad \vee \quad t = 13,92$

### Opgave 8:

- a.  $g = 0,873$   
b.  $0,85\%$

### Opgave 9:

- a.  $H = 20 \cdot 1,07^t$   
b.  $y_1 = 20 \cdot 1,07^x$  en  $y_2 = 55$   
intersect geeft  $x = 14,95$  dus op 15 mei  
c.  $y_1 = 20 \cdot 1,07^x$  en  $y_2 = y_1 - y_1(x-1)$   
kijk in de tabel wanneer  $y_2 > 5$   
dat is voor  $x = 20$  dus op 20 mei

### Opgave 10:

- a.  $2a^5 + 5a^5 = 7a^5$   
b.  $2a^3 \cdot 3a^6 = 6a^9$   
c.  $14a^8 : (2a^5) = 7a^3$   
d.  $(2a)^3 - a \cdot 7a^2 = 8a^3 - 7a^3 = a^3$   
e.  $(4a^2b)^2 = 16a^4b^2$   
f.  $(3a^2)^4 + 5(a^4)^2 = 81a^8 + 5a^8 = 86a^8$

**Opgave 11:**

- a.  $N = 860 \cdot 1,125^{4t-5}$   
 $N = 860 \cdot 1,125^{-5} \cdot 1,125^{4t}$   
 $N = 860 \cdot 0,555 \cdot (1,125^4)^t$   
 $N = 477 \cdot 1,602^t$
- b.  $R = 15 \cdot (2,5q^2)^3$   
 $R = 15 \cdot 15,625q^6$   
 $R = 234q^6$

**Opgave 12:**

- a.  $\frac{1}{a^3} = a^{-3}$
- b.  $a^4 \cdot \frac{1}{a^7} = a^4 \cdot a^{-7} = a^{-3}$
- c.  $\sqrt{a} = a^{\frac{1}{2}}$
- d.  $\sqrt[5]{a^3} = a^{\frac{3}{5}}$
- e.  $a^2 \cdot \sqrt[3]{a} = a^2 \cdot a^{\frac{1}{3}} = a^{2\frac{1}{3}}$
- f.  $\frac{1}{\sqrt[3]{a^2}} = \frac{1}{a^{\frac{2}{3}}} = a^{-\frac{2}{3}}$

**Opgave 13:**

- a.  $(a^{-\frac{1}{4}})^3 = a^{-\frac{3}{4}} = \frac{1}{a^{\frac{3}{4}}} = \frac{1}{\sqrt[4]{a^3}}$
- b.  $a^{-2} \cdot b^{\frac{1}{5}} = \frac{1}{a^2} \cdot \sqrt[5]{b} = \frac{\sqrt[5]{b}}{a^2}$
- c.  $7a^{-\frac{1}{3}} \cdot b^{\frac{3}{5}} = 7 \cdot \frac{1}{a^{\frac{1}{3}}} \cdot \sqrt[5]{b^3} = \frac{7 \cdot \sqrt[5]{b^3}}{\sqrt[3]{a}}$

**Opgave 14:**

- a.  $3x^{1,6} + 2 = 7$   
 $3x^{1,6} = 5$   
 $x^{1,6} = \frac{5}{3}$   
 $x = 1,376$
- b.  $\frac{1}{4}x^{-3} = 160$   
 $x^{-3} = 640$   
 $x = 0,116$
- c.  $7 \cdot \sqrt[5]{x^3} = 48$   
 $\sqrt[5]{x^3} = 6,857$   
 $x^3 = 15160,586$   
 $x = 24,750$
- d.  $6x^{-2,5} + 5 = 7$

$$6x^{-2,5} = 2$$

$$x^{-2,5} = \frac{1}{3}$$

$$x = 1,552$$

**Opgave 15:**

$$A = c \cdot p^{0,32}$$

$$64,2 = c \cdot 53,8^{0,32}$$

$$c = \frac{64,2}{53,8^{0,32}} = 17,93$$

$$A = 17,93 \cdot p^{0,32}$$

**Opgave 16:**

- a.  $g_{dag} = 1,1$   
 $g_{week} = 1,1^7 = 1,949$  dus een toename van 94,9%
- b.  $g_{jaar} = 0,64$   
 $g_{maand} = 0,64^{\frac{1}{12}} = 0,963$  dus een afname van 3,7%

**Opgave 17:**

$$g^3 = \frac{1200}{1500} = 0,8$$

$$g = 0,928$$

$$b = \frac{1500}{0,928^4} = 2020$$

$$N = 2020 \cdot 0,928^t$$

**Opgave 18:**

- a.  $1,1^t = 2$   
 $y_1 = 1,1^x$  en  $y_2 = 2$   
intersect geeft  $x = 7,27$  jaar , dus 7 jaar en 3 maanden
- b.  $0,8^t = 0,5$   
 $y_1 = 0,8^x$  en  $y_2 = 0,5$   
intersect geeft  $x = 3,1$  weken , dus 22 dagen

**Opgave 19:**

$$g^{25} = 0,5$$

$$g_{min} = \sqrt[25]{0,5} = 0,973$$

$$g_{uur} = 0,973^{60} = 0,189$$
 dus een afname van 81,1%